



PATENT  
Attorney Docket No. CIS-001CP

***IN THE UNITED STATES PATENT AND TRADEMARK OFFICE***

**APPLICANTS:** Schowalter and Slack  
**SERIAL NO.:** 10/ 822,336                      **GROUP NO.:** 1722  
**FILING DATE:** April 12, 2004              **EXAMINER:** Kunemund, R.  
**TITLE:** Powder Metallurgy Crucible For Aluminum Nitride Crystal Growth

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

Sir:

In accordance with the provisions of 37 C.F.R. 1.97 and 1.98, Applicants hereby make of record the patents and publications listed on the accompanying Form PTO-1449, and other information contained herein, for consideration by the Examiner in connection with the examination of the above-identified patent application. References A11 and B1 were previously cited in U.S. Patent Application Serial No. 09/251,106, from which this application claims priority. Accordingly, pursuant to 37 C.F.R. § 1.98(d), Applicants have not supplied copies of those references, but shall do so upon request.

Also, in accordance with the U.S. Patent Office's partial waiver of the requirement under 37 C.F.R. 1.98(a)(2), Applicants have not supplied copies of the U.S. patents and publications cited in the attached Form PTO-1449, but shall do so upon request. Copies of the foreign patent documents B2 and non-patent publications C1-C7 are enclosed.

**REMARKS**

In accordance with the provisions of 37 C.F.R. 1.97, this statement is being filed (CHECK ONE):

- ☒ (1) within three (3) months of the **filing date** of a national application other than a continued prosecution application under 37 C.F.R. 1.53(d), or within three (3) months of the **date of entry of the national stage** as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing of the **first Office action** on the merits, or before the mailing of a **first Office action** after the filing of a request for continued examination under 37 C.F.R. 1.114; or
- ☐ (2) after the period defined in (1) but before the mailing date of a **final action** or a **notice of allowance** under 37 C.F.R. 1.311, and
- ☐ the requisite Statement is below, **OR**
- ☐ the requisite fee under 37 C.F.R. 1.17(p), namely **\$180.00**, is included herein, or
- ☐ (3) after the mailing date of a **final action** or **notice of allowance** but before the payment of the **issue fee**, **AND**
- ☐ the requisite Statement is below, **AND**
- ☐ the requisite petition fee under 37 C.F.R. 1.17(p), namely **\$180.00** is included herein.

It is respectfully requested that each of the patents and publications listed on the attached Form PTO-1449, and other information contained herein, be made of record in this application.

Respectfully submitted,



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<b>FORM 1</b> <b>SUPPLEMENTAL INFORMATION</b> <b>DISCLOSURE STATEMENT</b>				<b>ATTORNEY DOCKET NO.:</b> CIS-001CP  <b>APPLICANTS:</b> Schowalter and Slack  <b>SERIAL NO.:</b> 10/822,336  <b>FILING DATE:</b> April 12, 2004  <b>GROUP:</b> 1722					
<b>U.S. PATENT DOCUMENTS</b>									
EXAM INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE		
	A1	4,234,554	11/18/80	Rabenau et al.					
	A2	5,858,085	01/12/1999	Arai <i>et al.</i>					
	A3	5,858,086	01/12/1999	Hunter					
	A4	5,909,036	06/01/1999	Tanaka <i>et al.</i>					
	A5	5,972,109	10/26/1999	Hunter					
	A6	6,001,748	06/04/1997	Tanaka <i>et al.</i>					
	A7	6,045,612	04/04/2000	Hunter					
	A8	6,048,813	04/11/2000	Hunter					
	A9	6,063,185	05/16/2000	Hunter					
	A10	6,086,672	07/11/2000	Hunter					
	A11	6,187,089	02/13/2001	Phillips <i>et al.</i>					
	A11	6,296,956	10/02/2001	Hunter					
<b>FOREIGN PATENT DOCUMENTS</b>									
EXAM. INIT.		DOCUMENT NUMBER	DATE	COUNTRY CODE	CLASS	SUB CLASS	FILING DATE	ABSTRACT ONLY	ENGLISH LANG (Y/N)
	B1	2000-154090	06/2000	JP				YES	N
	B2	02 018379A	01/22/1990	JP				YES	N
<b>EXAMINER</b>					<b>DATE CONSIDERED</b>				

<b>FORM PTO - 1449</b>		<b>ATTORNEY DOCKET NO.: CIS-001CP</b>	
<b>SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT</b>		<b>APPLICANTS:</b>	Schowalter and Slack
		<b>SERIAL NO.:</b>	10/822,336
		<b>FILING DATE:</b>	April 12, 2004
		<b>GROUP:</b>	1722
<b>OTHER ART, JOURNAL ARTICLES, ETC.</b>			
<b>EXAM. INIT.</b>	<b>OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)</b>		
	C1	Dryburgh, "Estimation of maximum growth rate for aluminum nitride crystals by direct sublimation", <i>J. Crystal Growth</i> 125, 65-68 (1992).	
	C2	A.S. Segal S. Yu, Karpov, Yu. N. Makarov, E.N. Mokhov, A.D. Roenkov, M.G. Ramm, Yu. A. Vodakov, "On mechanisms of sublimation growth of AlN bulk crystals", <i>J. Crystal Growth</i> 211, 68-72 (2000).	
	C3	B. Raghothamachar, W.M. Vetter, M. Dudley, R. Dalmau, R. Schlessner, Z. Sitar, E. Michaels, and J.W. Kolis, "Synchrotron white beam topography characterization of physical vapor transport grown AlN and ammonothermal GaN", <i>J. Crystal Growth</i> 246, 271-280 (2002).	
	C4	R. Schlessner, R. Dalmau, and Z. Sitar, "Seeded growth of AlN bulk single crystals by sublimation", <i>J. Crystal Growth</i> 241, 416-420 (2002).	
	C5	L.J. Schowalter, G.A. Slack, J.B. Whitlock, K. Morgan, S.B. Schujman, B. Raghothamachar, M. Dudley, and K.R. Evans, "Fabrication of native, single-crystal AlN substrates", <i>Phys. Stat. Sol. (c)</i> , 104, (2003).	
	C6	V. Noveski, R. Schlessner, S. Mahajan, S. Beaudoin, and Z. Sitar, "Growth of AlN crystals on AlN/SiC seeds by AlN powder sublimation in nitrogen atmosphere", <i>MRS Internet J. Nitride Semicond. Res.</i> 9, 2 (2004).	
	C7	V. Noveski, R. Schlessner, S. Mahajan, S. Beaudoin, and Z. Sitar, "Mass transfer in AlN crystal growth at high temperatures", <i>J. Crystal Growth</i> 264, 369-378 (2004).	
<b>EXAMINER</b>		<b>DATE CONSIDERED</b>	